

TANDBERG

TCD 310 MkII

Illustrated Parts List

INSTRUCTIONS FOR ORDERING REPLACEMENT PARTS

For service and replacement parts contact your nearest Tandberg office or
write to: Tandbergs Radiofabrikk A/S
Service and Spares Department
P.O. Box 218
N 1301 Sandvika, Norway

Telex: 18007 kurer n

When ordering please quote the model and serial numbers together with the ordering
number and the full description of each part required. The serial number is a seven
digit number found on the rear of the apparatus.

Example: Model TCD 310 MkII Serial number xxxxxxxx
 994119 Knapp

Note! The numbers on the illustrations are index numbers and must not be used
when ordering. Please refer to the parts list for the ordering number and
description.

* These parts are not available as replacement parts.

INSTRUKS FOR BESTILLING AV DELER

For service og servicedeler kontakt nærmeste Tandberg kontor eller bruk adressen
som er vist ovenfor.

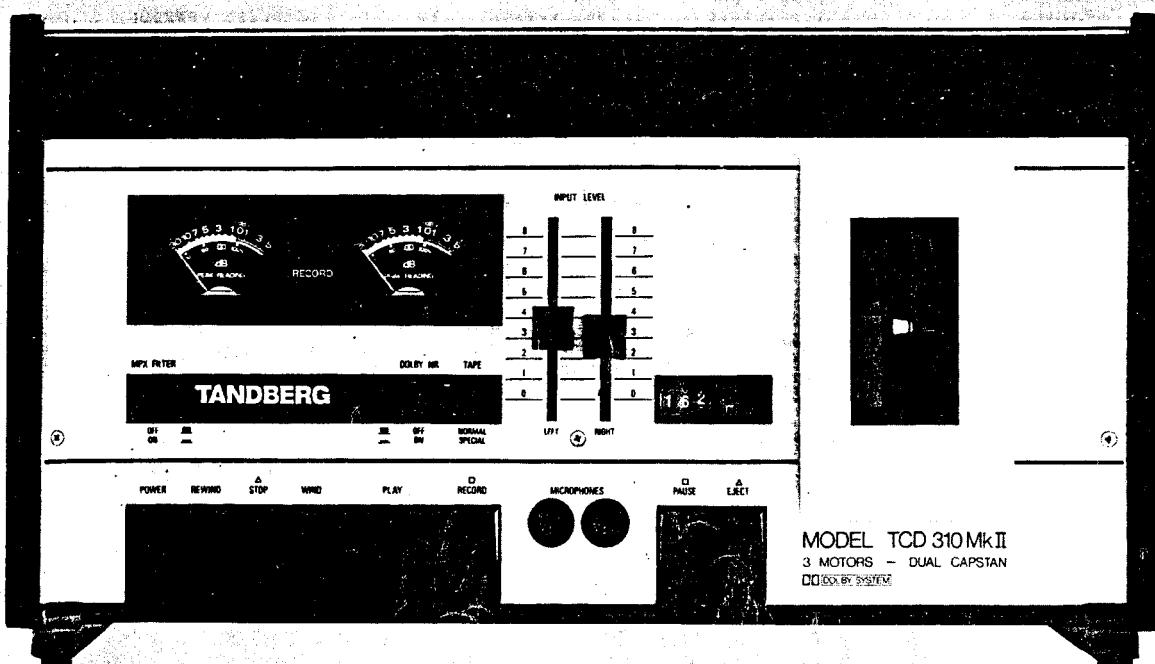
Modell og serienummer må alltid oppgis ved bestilling av deler. Bestillingsnr. og
beskrivelse finnes i listen. Det 7-sifrede serienr. finnes på baksiden av apparatet.

Eksempel: Modell TCD 310 MkII Serienr. xxxxxxxx
 994119 Knapp

Merk! Tallene på tegningene er indeksnumre og må ikke brukes ved bestilling.

Bestillingsnr. og beskrivelse finnes i listen.

* Leveres ikke som servicedel.



Chassis assembly

Index	SPECIFY THIS WHEN ORDERING		Description (notes)	Reference
	Ordering No.	Beskrivelse (merknader)		
1	*	SJASSIS-ENHET	CHASSIS ASSEMBLY	
	995103	PLATE	PLATE, TOP (LEV. M/INDEX 2+3)	
2	313191	VINDU	(SUPPLIED WITH INDEX 2 AND 3)	
3	292581	PLATE	WINDOW, COUNTER, PLASTIC	
4	994119	KNAPP	MASK, FELT	
5	353061	KNAPP	KNOB, BLACK, PLASTIC, WITH SPRING	
			BUTTON, PUSH, BLACK, PLASTIC	
6	294556	SKRUE	SCREW, PLATE, 3/8" NO. 4 CSK HD	
7	995105	SKINNE	PLATE, TOP, REAR, WITH MESH	
8	309060	SKRUE	SCREWS, PLATE, 1/4" NO. 6 PAN HD	
9	290447	SKRUE	SCREWS, PLATE, 3/8" NO. 6 PAN HD	
10	995113	DEKSEL	COVER (SUPPLIED WITH INDEX 11)	INPUT LEVEL MPX FILTER, DOLBY NR., TAPE
11	343694	VINDU	WINDOW, PLASTIC	
12	359928	SKINNE	PLATE, FRONT (SUPPLIED WITH INDEX 13)	
13	*	AKSEL	ROD	
14	354462	KNAPP	BUTTON, BLACK, PLASTIC	POWER, REWIND, WIND, PAUSE EJECT
15	352429	KNAPP	BUTTON, BLACK, PLASTIC	
16	350582	FJÆR	SPRING	
17	352263	TAPP	PEG	
18	354296	FJÆR	SPRING	
19	354110	KNAPP	BUTTON, BLACK, PLASTIC	PLAY
20	350748	KNAPP	BUTTON, BLACK, PLASTIC	STOP
21	350396	HYLSE	ARM, PLASTIC	
22	227899	SKRUE	SCREW, PLATE, 1/4" NO. 6 FLANGE HD	
23	207418	LODDEØRE	TAG, SOLDER, 4.2 MM	
24	274162	KONTAKT	SOCKET, 5 PIN DIN 180 DEGREES	MICROPHONES
	294420	JACK	SOCKET, JACK, 3 POLE 1/4 IN.	
25	313837	SKIVE	SURROUND, DIN SOCKET, PLASTIC	MICROPHONES
	312156	MUTTER	NUT, PLASTIC	
26	286267	FJÆR	SPRING, FLAT	
27	994152	FOT	FOOT, PAIR (SUPPLIED WITH INDEX 28 TO 30 INCL.)	
28	*	PLATE	PLATE	
29	324297	FOT	FOOT, RUBBER	
30	309693	SKRUE	SCREW, PLATE, 1/4" NO. 4 FLANGE HD	
31	348995	PLATE	PANEL, PLASTIC, BLACK	
32	262984	SKRUE	SCREW, PLATE, 5/8" NO. 6 PAN HD, BLACK	
33	309599B	PLATE	PLATE, SIDE WALL, LEFT	
34	290211	PLATE	PLATE, ISOLATION	
35	272739	MUTTER	NUT, PLATE	
36	349030	TRANSFORMATOR	TRANSFORMER	115/230V
	347996	TRANSFORMATOR	TRANSFORMER	120/240V
37	334807	SKRUE	SCREW, 4 X 8 MM PAN HD	
38	202332	SKIVE	WASHER, 4.3 MM	
39	305885A	PLATE	PLATE, SIDE WALL, RIGHT	
40	227949	FOT	FOOT, RUBBER	
41	301596A	PLATE	COVER, BOTTOM	
42	297925	SKRUE	SCREW, PLATE, 5/16" NO. 6 FLANGE HD, BLACK	
43	350230	SKINNE	PLATE, REAR WALL	
44	300612A	KLAMMER	GUIDE, PLASTIC	
45	267597	LEDNING	CABLE, POWER, ENGLAND, WITHOUT PLUG	ENGLISH VERSION
	299621	LEDNING	CABLE	U.S.A. VERSION
	335569	LEDNING	CABLE, POWER, WITH PLUG	EUROPEAN VERSION
	335927	LEDNING	CABLE, POWER, WITH PLUG	SCANDINAVIAN VERSION
46	284744	HYLSE	GROMMET, CABLE, POWER	
	281L54	TUBE	TUBE, CABLE, POWER	
47	273832	SKIVE	WASHER, 22 X 10.2 X 0.56 MM	
		TRANSISTOR	TRANSISTOR	
48	*	SKIVE	WASHER	
	(LEV. M/INDEX 48)		(SUPPLIED WITH INDEX 48)	
49	*	SKIVE	WASHER	
	(LEV. M/INDEX 48)		(SUPPLIED WITH INDEX 48)	
50	*	SKIVE	WASHER	
	(LEV. M/INDEX 48)		(SUPPLIED WITH INDEX 48)	
51	296417	SKRUE	SCREW, 2.6 X 8 MM PAN HD	
52	271367	MUTTER	NUT, 2.6 MM	
53	309247	BRAKETT	BRACKET	
54	290842	SKRUE	SCREW, 3 X 6 MM PAN HD	
55	274162	KONTAKT	SOCKET, 5 PIN DIN 180 DEGREES	RADIO
56	283773	KONTAKT	SOCKET, PHONO	OUTPUT, INPUT
57	294420	JACK	SOCKET, JACK, 3 POLE 1/4 IN.	PHONES
58	310397	PLATE	SCREEN	
59	277509	HOLDER	HOLDER, FUSE	
60	272207	SIKRING	FUSE, 1.6 A, 5 X 20 MM, SLOW	\$101, 230/240 V
	289629	SIKRING	FUSE, 2 A, 1 1/4" X 1/4"	\$101, 115 V
	307464	SIKRING	FUSE, 2 A, 1 1/4" X 1/4"	\$101, US BASE

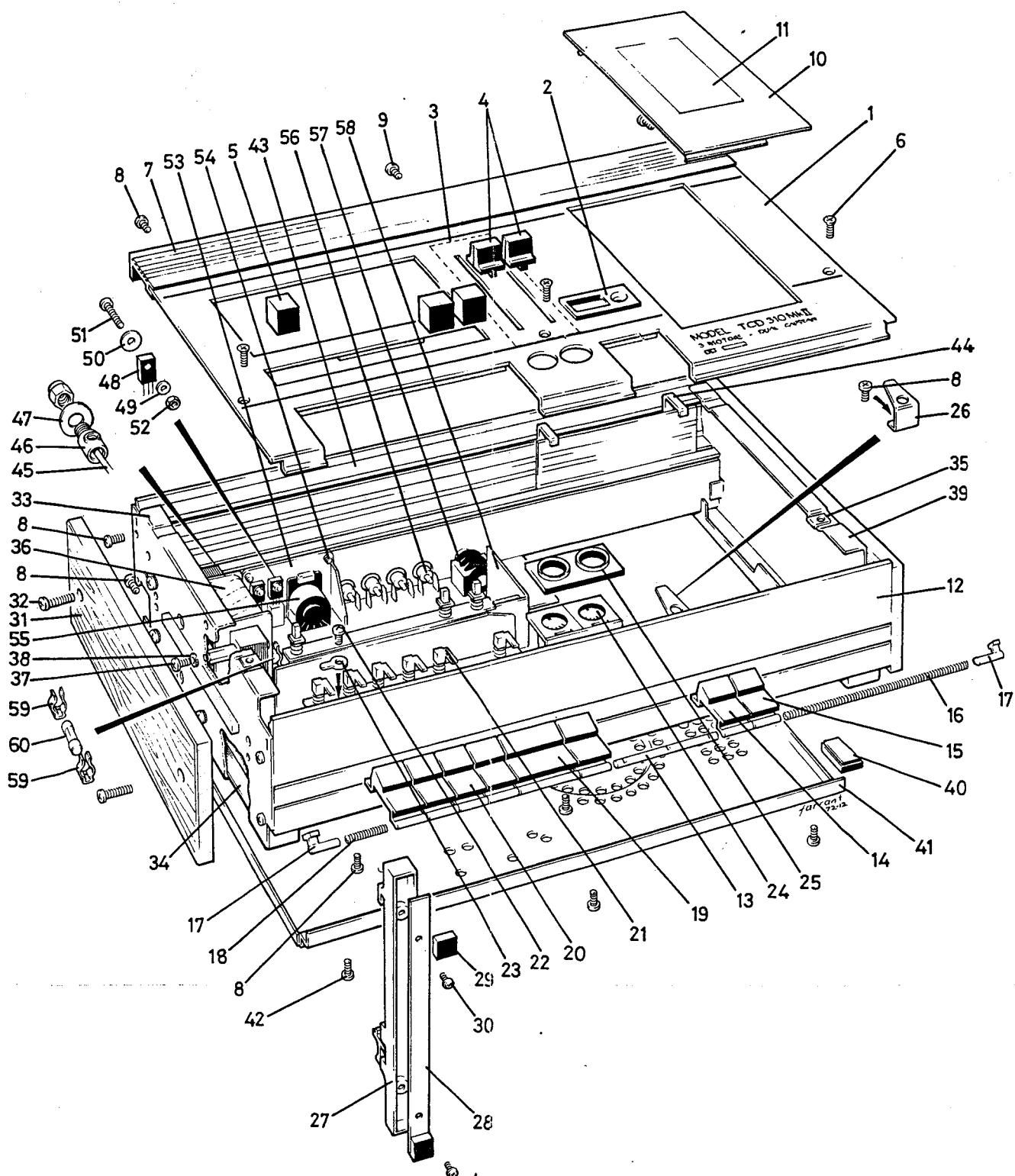


Fig.1 Chassis assembly

Meter board assembly

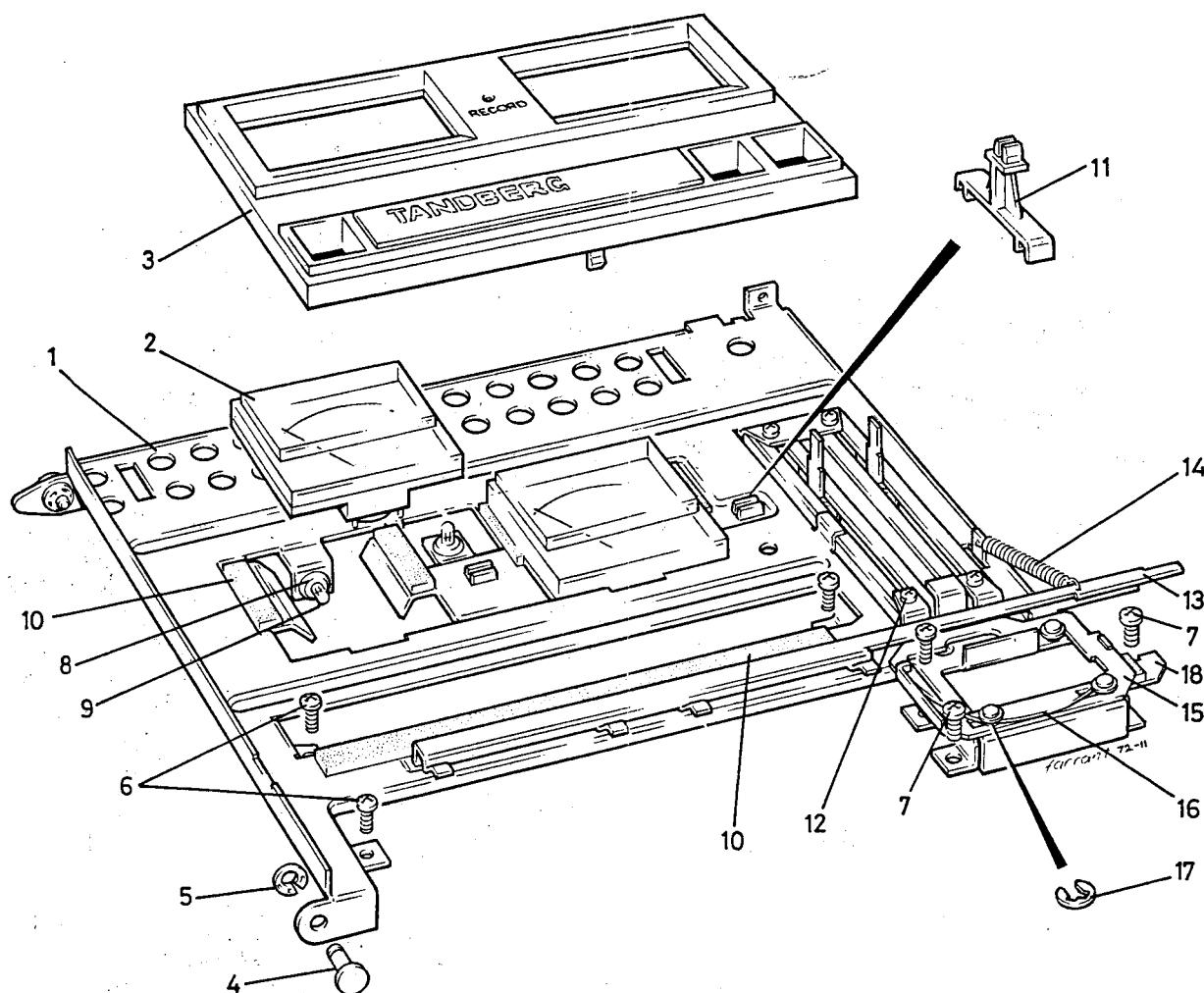


Fig.2 Meter board assembly

SPECIFY THIS WHEN ORDERING		Description (notes)	Reference
Index	Ordering No.	Beskrivelse (merknader)	
1	995104	INSTRUMENTKORT-ENHET RAMME (LEV. M/INDEX 1C)	METER BOARD ASSEMBLY FRAME (SUPPLIED WITH INDEX 10)
2	348075	INSTRUMENT	METER
3	995100	HOLDER	HOLDER, METER
4	303701	AKSEL	POST, PIVOT
5	245649	SKIVE	RING, CIRCLIP, 4 MM
6	220392	SKRUE	SCREW, PLATE, 1/4" NO. 4 PAN HD
7	309060	SKRUE	SCREW, PLATE, 1/4" NO. 6 PAN HD
8	285720	TUBE	GROMMET, RUBBER
9	995102	LAMPE	BULB, 14 V 80 MA
10	250477	LIST	STRIP, FOAM RUBBER, 3 X 9 MM
11	289765A	KLAMMER	GUIDE, PLASTIC
12	269255	SKRUE	SCREW, 3 X 4 MM PAH HD
13	310123	SKINNE	ARM, LOCKING
14	279040	FJÄR	SPRING
15	291726	RAMME	PLATE
16	291022	FJÄR	SPRING
17	239651	SKIVE	RING, CIRCLIP, 3.2 MM

Drive assembly

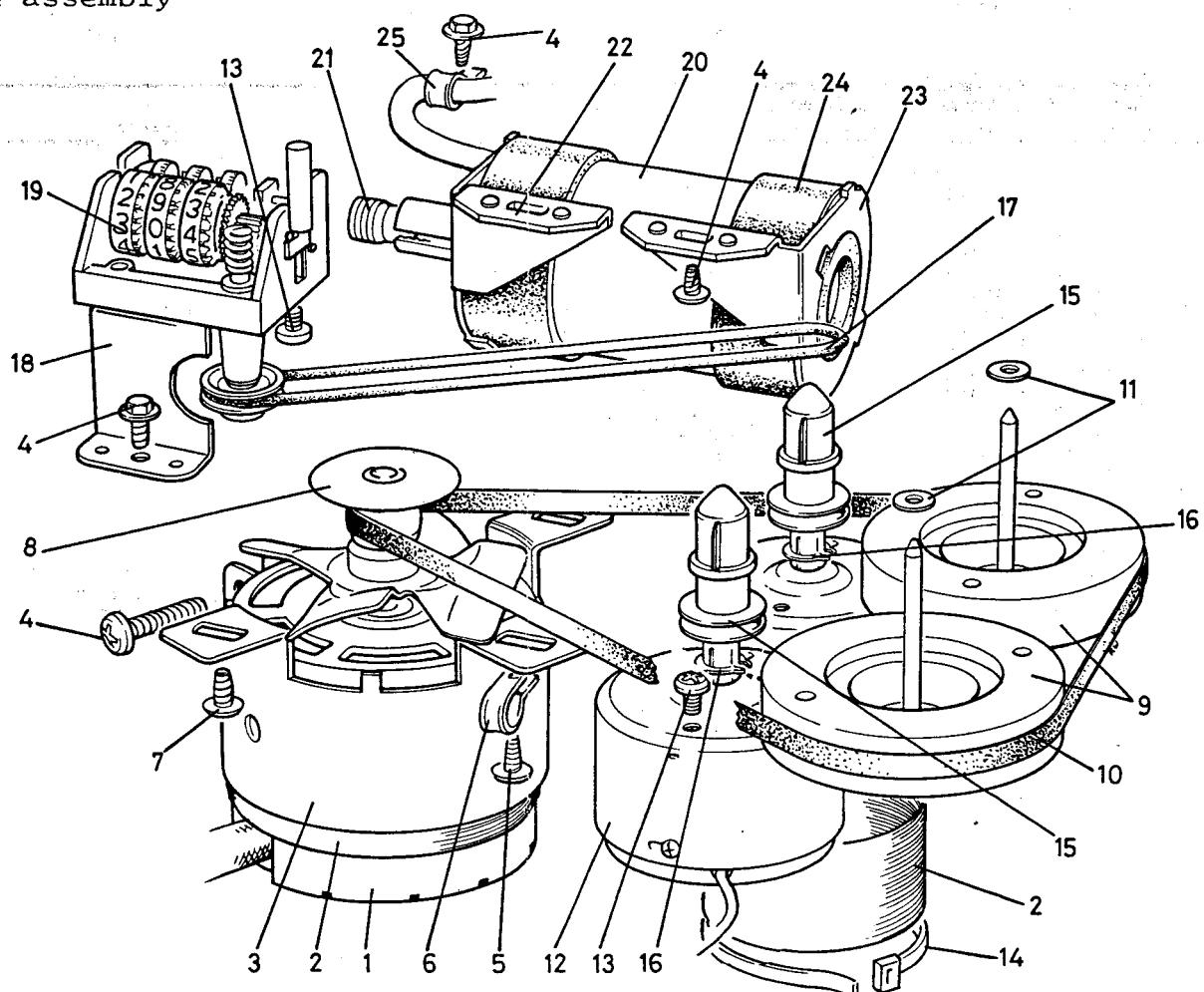


Fig. 3 Drive assembly

SPECIFY THIS WHEN ORDERING		Description (notes)	Reference
Index	Ordering No.		
1	280405	FREMDRIFTS-ENHET MOTOR	DRIVE ASSEMBLY MOTOR
2	306775	SKJERM	SCREEN
3	302645	KLAMMER	BRACKET, SUPPORT, MOTOR
4	262984	SKRUE	SCREW, PLATE, 5/8" NO. 6 PAN HD, BLACK
5	288141	SKRUE	SCREW, PLATE, 3/8" NO. 6 FLANGE HD
6	215507	KLAMMER	CLAMP, CABLE, NYLON, 9 MM
7	346854	SKRUE	SCREW, PLATE, 3.5 X 6.3 MM HEX HD
8	994158	DRIVHJUL	PULLEY, DRIVE, 50 HZ
9	994159	DRIVHJUL	PULLEY, DRIVE, 60 HZ
10	994111	SVINGHJUL (PARVIS TILPASSET, OG MED INDEX 10)	FLYWHEEL (SUPPLIED IN MATCHED PAIR AND WITH INDEX 10)
11	994183	RING	BELT, DRIVE, RUBBER
12	285369	SKIVE	WASHER, 6 X 2.7 X 0.5 MM, PLASTIC
13	284823	MOTOR	MOTOR
14	269255	SKRUE	SCREW, 3 X 4 MM PAN HD
15	319506	BAND	STRAP, PLASTIC
16	994113	AKSEL (LEV. M/INDEX 16)	SPINDLE, TAPE REEL (SUPPLIED WITH INDEX 16)
17	213826	RING	RING, RETAINING, EXTERNAL, 6 MM
18	309600	RING	BELT, DRIVE, RUBBER
19	286597	BAKETT	BRACKET, SUPPORT, COUNTER
20	280132	TELLER	COUNTER
21	994184	TREKKMAGNET	SOLENOID
22	264212A	SKRUE	SCREW, NYLON
23	995101	KLAMMER	BRACKET
24	302300	KLAMMER	BRACKET
25	300942A	HYLSE	HOUSING, RUBBER
	202684	KLAMMER	CLAMP, CABLE, NYLON, 5 MM
			L1, L2, START SOLENOID

Motor board assembly

SPECIFY THIS WHEN ORDERING				
Index	Ordering No.	Beskrivelse (merknader)	Description (notes)	Reference
1	*	MOTORPLATE-ENHET	MOTOR BOARD ASSEMBLY	
2	302020	PLATE	PLATE, SUPPORT, MOTOR	
3	245649	AKSEL	POST, PIVOT	
4	229824	SKIVE	RING, CIRCLIP, 4 MM	
5	301395	KLIPS	CLIP	
6	301747A	HYLSE	CAM, NYLON	
7	995102	SKJERM	REFLECTOR, ILLUMINATION	
8	285720	LAMPE	BULB, 14 V 80 MA	
9	355014	TUBE	GROMMET, RUBBER	
10	994117	PLATE	DISC, THRUST BEARING	
11	290842	SKRUE	PLATE, MOUNTING, FLYWHEEL	
12	207173	LAGER	SCREW, 3 X 6 MM PAN HD	
13	303622	KULE	BEARING, 2.5 MM	
14	301323	ARM	BALL, BEARING	
15	300964	ARM	LEVER, SOLENOID	
16	304685	FJÆR	ARM	
17	994112	BRAKETT	SPRING	
18	223675	LODDEØRE	BRACKET, WITH SPINDLE	
19	346854	SKRUE	TAG, SOLDER, 4.2 MM	
20	284119	VENDER	SCREW, PLATE, 3.5 X 6.3 MM HEX HD	
			SWITCH, LEAF, N/O	
21	289083	VENDER	SWITCH, LEAF, C/O, WITH BRACKET AND SCREW	
22	269255	SKRUE	SCREW, 3 X 4 MM PAN HD	
23	994122	BRAKETT	BRACKET, SUPPORT, PUSH SWITCH	
24	300497	VENDER	SWITCH, PUSH	
25	350827	HYLSE	ARM, PLASTIC	
26	301675	ARM	LEVER, PAUSE	
27	302997	AKSEL	POST, PIVOT	
28	286051	FJÆR	SPRING	
29	303004	BRAKETT	BRACKET, SUPPORT, LEAF SWITCH	
30	994114	BRAKETT	BRACKET, EJECT MECHANISM, CASSETTE (SUPPLIED WITH INDEX 31, 32 AND 33)	
31	230363	FJÆR	SPRING	
32	230542	SKIVE	RING, CIRCLIP, 2.3 MM	
33	994124	ARM	LEVER, WITH SPINDLE	
34	230363	FJÆR	SPRING	
35	285268	ARM	LEVER	
36	230542	SKIVE	RING, CIRCLIP, 2.3 MM	
37	202303	TUBE	TUBE, RUBBER	
38	352385	BRAKETT	BRACKET, SUPPORT, CASSETTE DRAWER	
39	351581	STRØMPE	SLEEVE, RUBBER	
40	301668	AKSEL	SPINDLE	
41	237970	SKIVE	RING, CIRCLIP, 1.5 MM	
42	300490	BRAKETT	BRACKET, CASSETTE DRAWER	
43	289413	FJÆR	SPRING	
44	304678	TAPP	POST, PIVOT	
45	287380A	ARM	ARM	
46	237360	FJÆR	SPRING	
47	293824	FJÆR	SPRING	
48	304103	ARM	ARM	
49	301316	AKSEL	POST, PIVOT	
50	994120	STYRING	GUIDE, CASSETTE, LEFT (SUPPLIED WITH INDEX 52 AND 53)	
51	292875	SKRUE	SCREW, PLATE, 3/8" NO. 4 FLANGE HD	
52	291791	FJÆR	SPRING, CASSETTE DRAWER, LEFT	
53	299606	SKRUE	SCREW, PLATE, 3/16" NO. 2 PAN HD	
54	252158	LIST	STRIP, FOAM RUBBER, 6 X 7 MM	
55	994121	STYRING	GUIDE, CASSETTE, RIGHT (SUPPLIED WITH INDEX 53 AND 56)	
56	290110	FJÆR	SPRING, CASSETTE DRAWER, RIGHT	

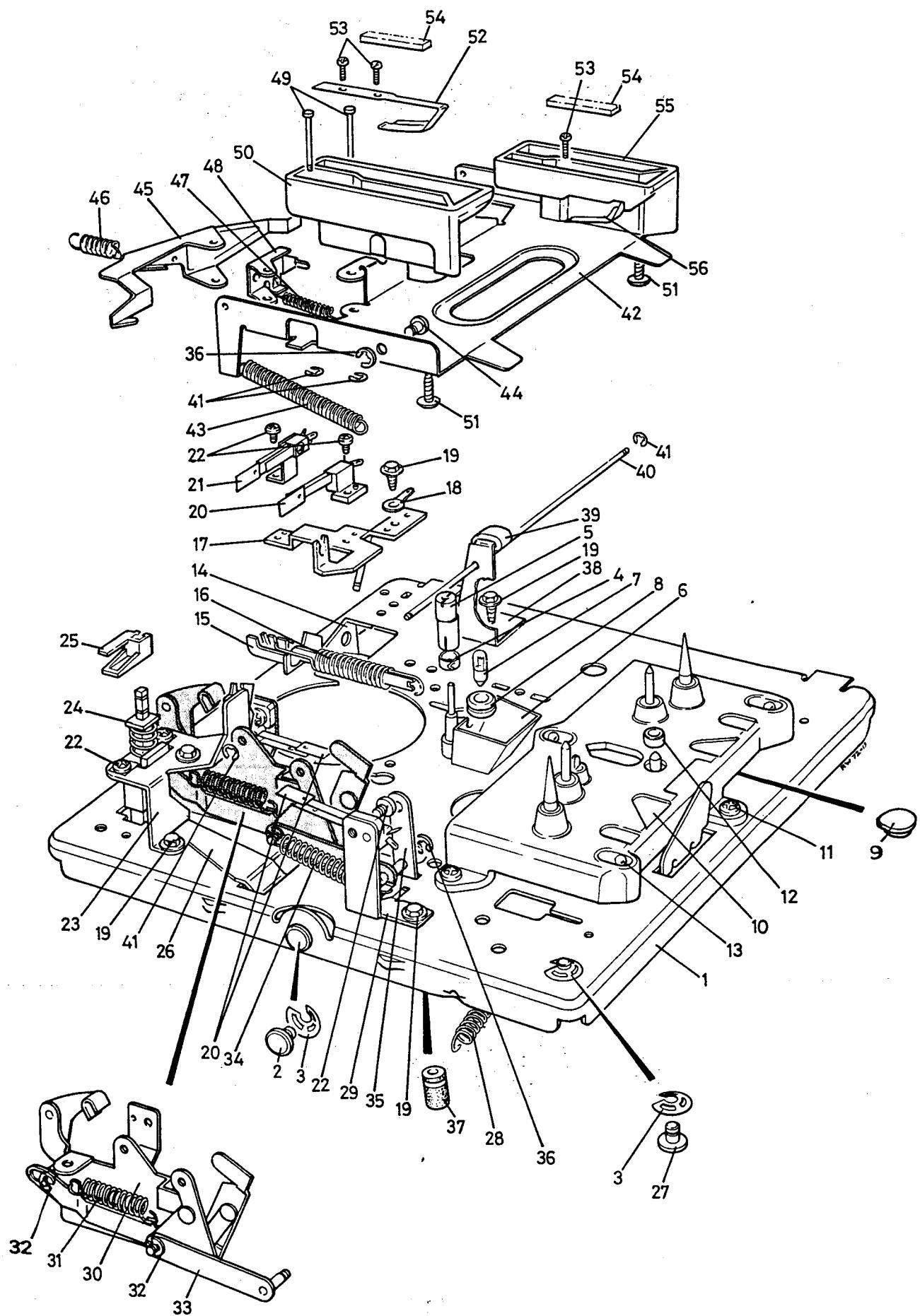


Fig. 4 Motor board assembly

Head plate assembly

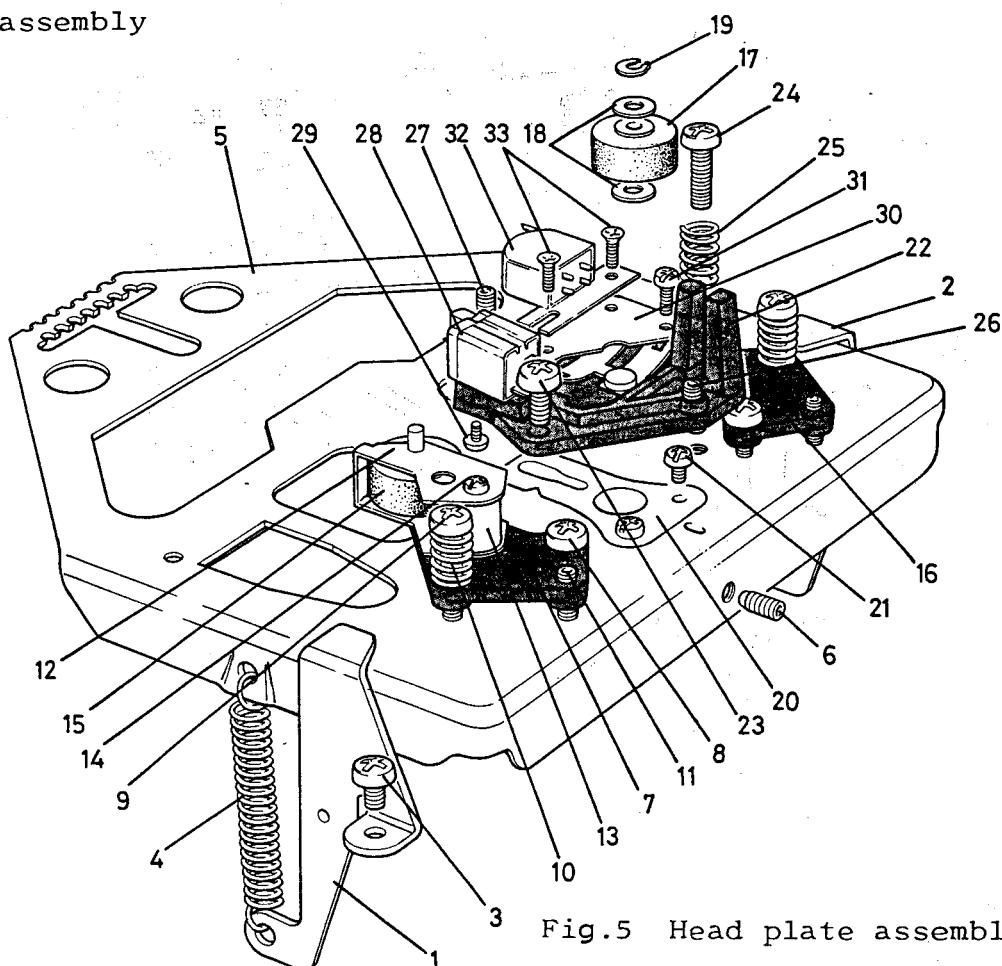


Fig.5 Head plate assembly

Index	SPECIFY THIS WHEN ORDERING		Description (notes)	Reference
	Ordering No.	Beskrielse (merknader)		
1	*	HODEBRO-ENHET		
2	304333A	ARM		
3	302652B	ARM		
4	269255	SKRUE		
5	287732	FJÄR		
6	*	PLATE		
7	890002	SKRUE		
8	994191	PLATE		
9	(LEV. M/INDEX 8-15)			
10	292523	SKRUE		
11	293852	SKRUE		
12	240406A	FJÄR		
13	890003	SKRUE		
14	303270A	BÖYLE		
15	300339	BOSS		
16	292839	SKRUE		
17	860004A	HJUL		
18	994192	PLATE		
19	(LEV. M/INDEX 8-11, OG 17-19)		(SUPPLIED WITH INDEX 8 TO 11, AND 17 TO 19 INCL.)	
20	860004A	HJUL	ROLLER, PRESSURE, RUBBER	
21	244377	SKIVE	WASHER, 6 X 2.5 X 0.3 MM	
22	212145	RING	RING, RETAINING, EXTERNAL, 2.5 MM	
23	285699A	FJÄR	SPRING, FLAT	
24	294520	SKRUE	SCREW, 2.3 X 3 MM PAN HD	
25	994104	PLATE	PLATE, MOUNTING, HEAD	
26	290842	SKRUE	SCREW, 3 X 6 MM PAN HD	
27	292171	SKRUE	SCREW, 3 X 12 MM PAN HD	
28	24C406A	FJÄR	SPRING	
29	89C003	SKRUE	SCREW, SET, 3 X 8 MM	
30	89C000	SKRUE	SCREW, SET, 3 X 5 MM	
31	282086	HODE	HEAD, ERASE	
32	290806	SKRUE	SCREW, 1.7 X 3 MM PAN HD	
33	287926A	PLATE	PLATE	
	292487	SKRUE	SCREW, 2 X 5 MM PAN HD	
	99418G	HODE	HEAD, RECORD AND PLAY	
	294168	SKRUE	SCREW, 2 X 6 MM CSK HD	

Switches and connectors

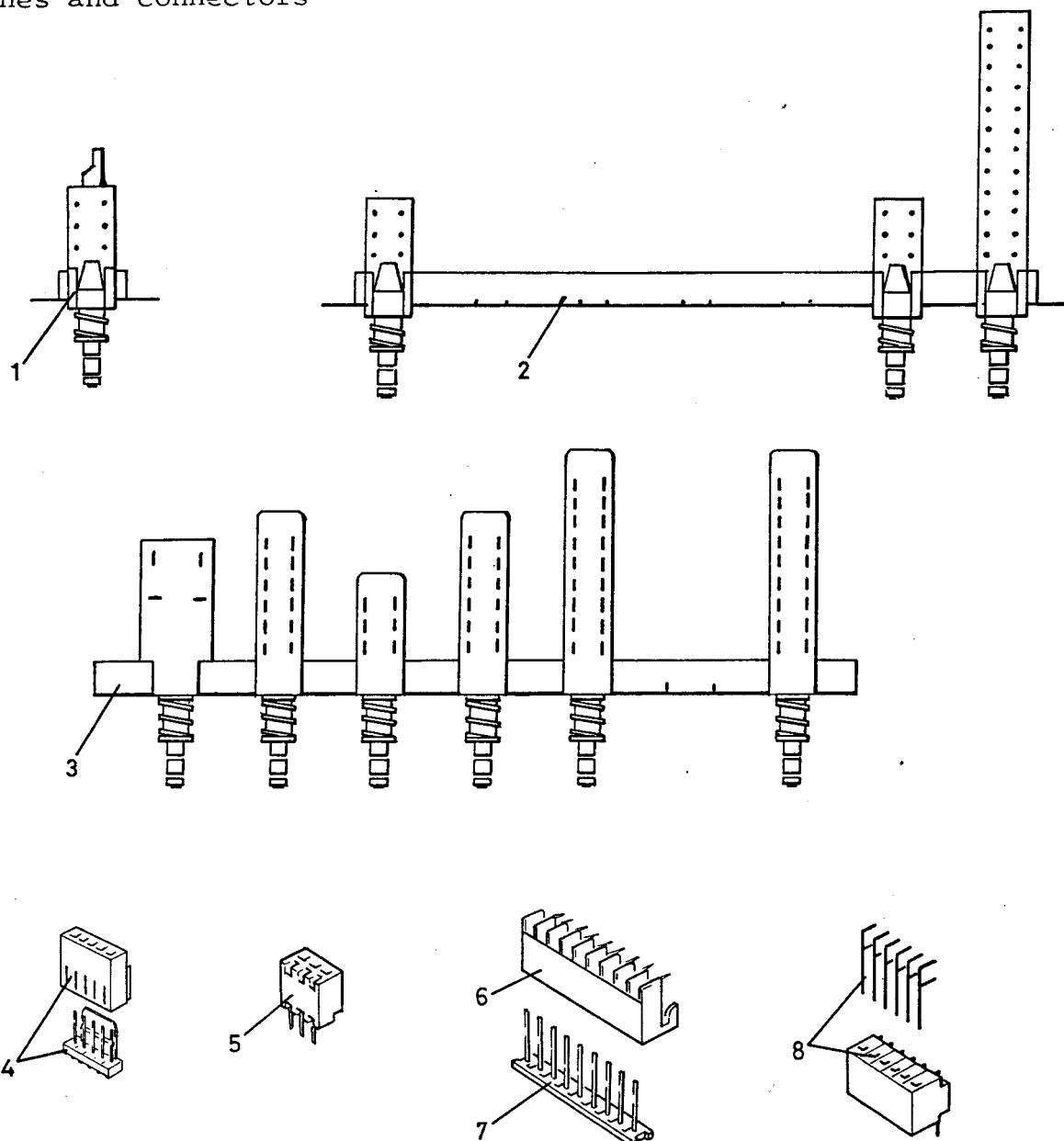


Fig.6 Switches and connectors

Index	SPECIFY THIS WHEN ORDERING		Description (notes)	Reference
	Ordering No.	Beskrivelse (merknader)		
1	*	VENDER	SWITCHES	
2	30C497 284902	VENDER	SWITCH, PUSH	PAUSE
3	308156	VENDER	SWITCH, PUSH	MPX FILTER, DOLBY NR., TAPE
4	*	KONTAKTER	CONNECTORS	POWER, REWIND, STOP, WIND, PLAY, RECORD
	995818	KONTAKT	CONNECTOR, 2 POLE, SMALL	
	995819	KONTAKT	CONNECTOR, 3 POLE, SMALL	
	995820	KONTAKT	CONNECTOR, 4 POLE, SMALL	
	995821	KONTAKT	CONNECTOR, 5 POLE, SMALL	
5	318320	KONTAKT	CONNECTOR, FIXED, 3 POLE	
6	347551	KONTAKT	CONNECTOR, FIXED, 9 POLE	
7	346222	PLINT	CONNECTOR, FIXED, 9 POLE	
8	996302 996303	KONTAKT	CONNECTOR, 3 POLE, BLACK	
		KONTAKT	CONNECTOR, 6 POLE, BLACK	

Printed circuit boards

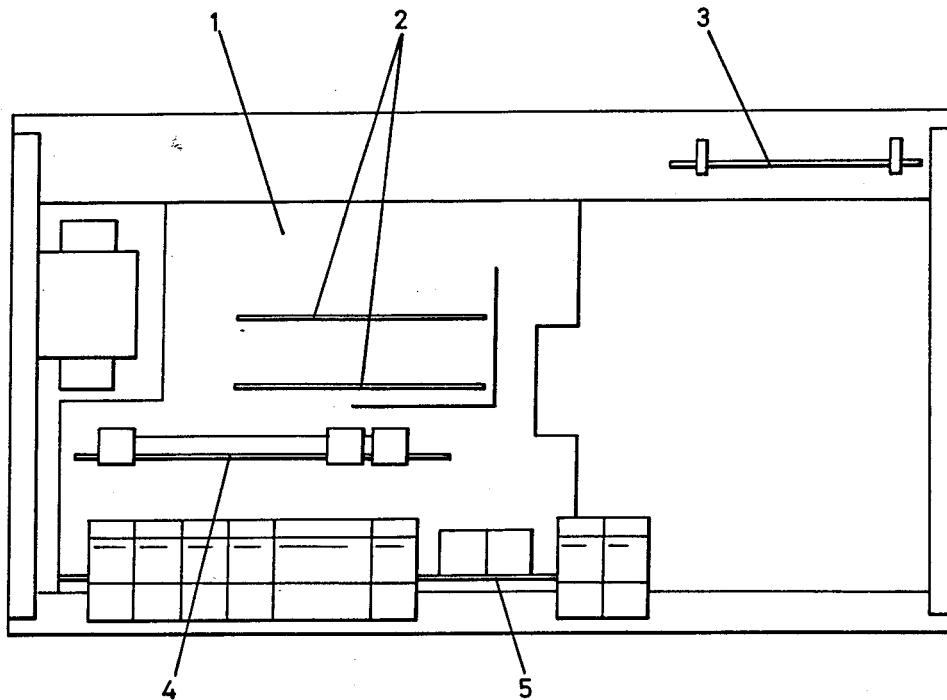


Fig.7 Printed circuit boards

Index	SPECIFY THIS WHEN ORDERING		Description (notes)	Reference
	Ordering No.	Beskrivelse (merknader)		
1	*	TK PLATER	PRINTED CIRCUIT BOARDS	
	994194	KORT	BOARD, MOTHER	A1
2	994197	KORT	BOARD, DOLBY	A4
3	994198	KORT	BOARD, OSCILLATOR	A5
4	994196	KORT	BOARD, AMPLIFIER, 2	A3
5	994195	KORT	BOARD, AMPLIFIER, 1	A2, DIN MIC. SOCKET
	994199	KORT	BOARD, AMPLIFIER, 1	A2, JACK MIC. SOCKET

TANDBERG

TCD 310 Mk II

Tillegg og rettelser til Illustrert deleliste

Additional information and corrections to Illustrated Parts List

Side Page	Index	Del	Part	Correct Part. No.	Merknader Notes
3	36	Transformator	Transformer 115/230 V	358269	
	45	Ledning	Cable power, England	985356	English version
4	18	Vippe	Lever	293407A	
5	4	Skrue	Screw 3.5 x 6.3 mm	346854	
	17	Ring	Belt drive, rubber	300001	Below s.no. 4415300, see Figure 1
	17B	Ring	Belt drive, rubber	309600	From s.no. 4415301, see Figure 2
	15	Aksel	Spindle, tape reel	994113	Below s.no. 4415300, see Figure 1
	15B	Aksel	Spindle, tape reel	994187	From s.no. 4415301, see Figure 2
8	28	Hode	Head, erase, Tandberg	716331	Innføring av Tandberg viskehode. Ved utskiftning erstatt med samme hodetype. Se Figur 3.
		Skrue	Screw, 1.2 x 11.5 mm	890008	Introduction of Tandberg erase head. Replace with same type of head. See Figure 3.
		Skive	Washer, 1.4 mm	356947	
9	32	Hode	Head, rec./playback	995115	U.S.-version
9	2	Vender	Switch, push	358700	From s.no. 4406300

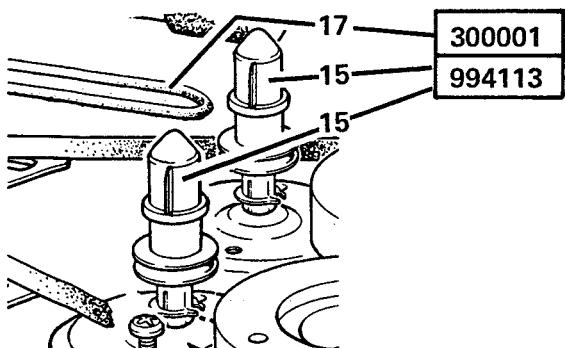


Fig.1. Counter drive belt, below s.no.4415300
Telleverksrem, under s.nr.4415300

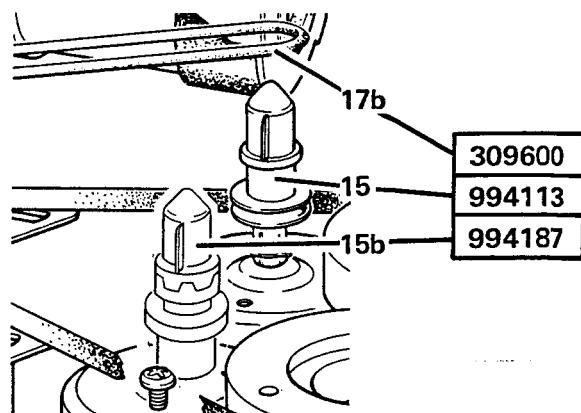


Fig.2. Counter drive belt, above s.no.4415300
Telleverksrem, over s.nr.4415300

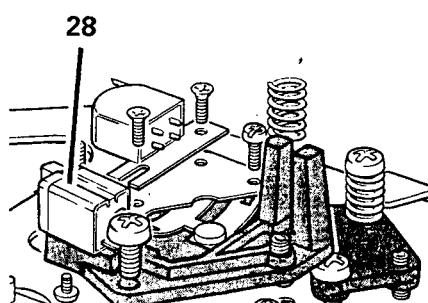
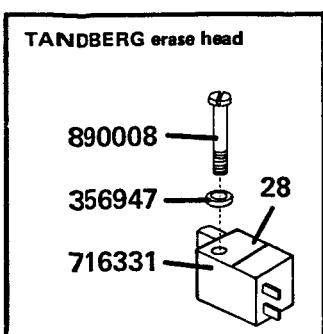


Fig.3. Two different types of erase heads
To typer slukkehoder

Merk: Ved utskifting, erstatt med samme type hode.
Note: Replace with same type of head

TANDBERG

TCD 310 Mk II

Circuit Diagram

**— TANDBERG —
ZENTRAL-SERVICE**

Jochen Schmidt

Am Strasserfeld 2

Telefon (0211) 203076 - Telefax (0211) 202954
4000 DÜSSELDORF 12 UNTERBACH

**— TANDBERG —
ZENTRAL-SERVICE**

Jochen Schmidt

Am Strasserfeld 2

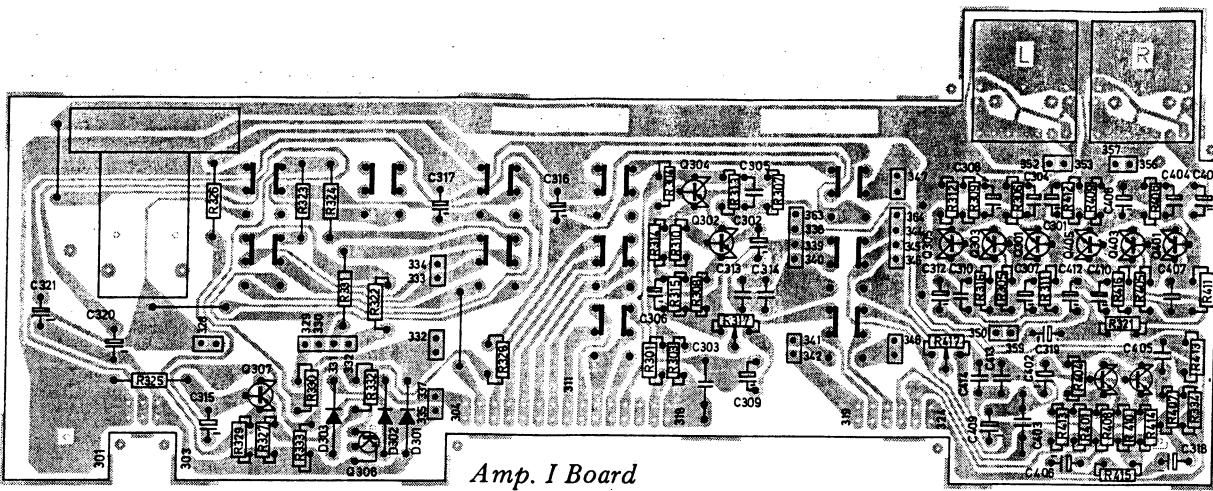
Telefon (0211) 203076 - Telefax (0211) 202954
4000 DÜSSELDORF 12 UNTERBACH

FROM SERIAL NO. 4400326

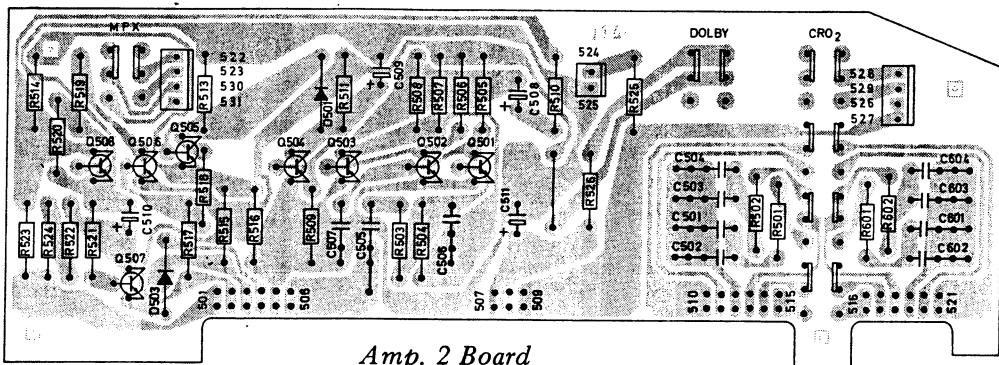
1458 - 11 - 76 Part No. 714025
Printed in Norway by Petlitz

TANDBERG

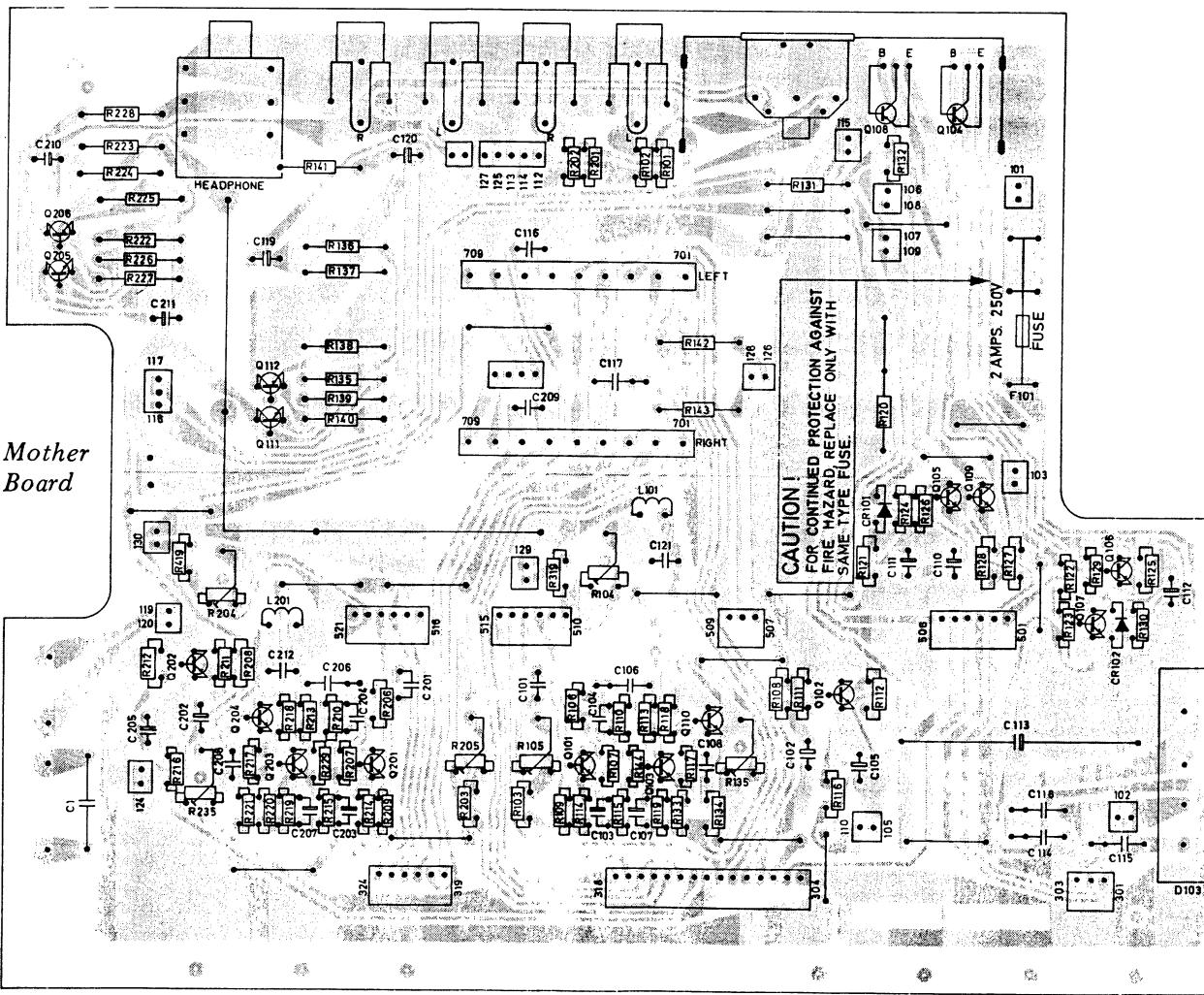
TCD 310 Mk II



Amp. I Board

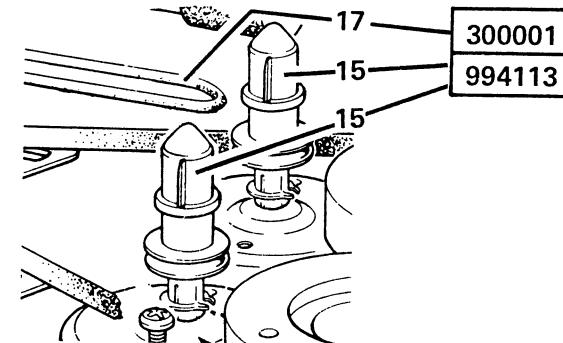


Amp. 2 Board

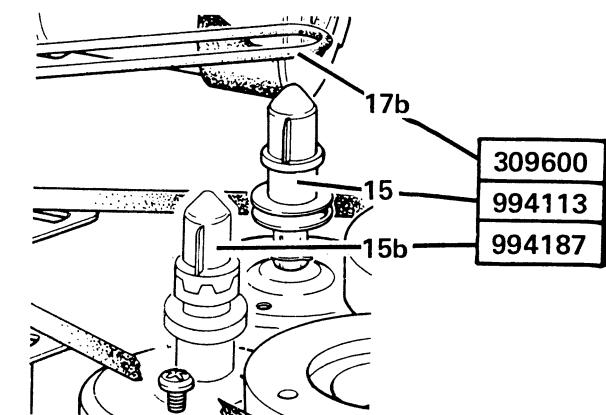


Mother Board

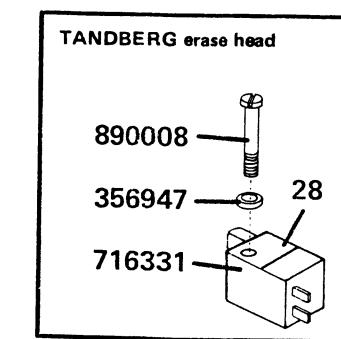
Side Page	Index	Del	Part	Correct Part. No.	Merknader Notes
3	36	Transformator	Transformer 115/230 V	358269	
	45	Ledning	Cable power, England	985356	English version
4	18	Vippe	Lever	293407A	
5	4	Skrue	Screw 3.5 x 6.3 mm	346854	
	17	Ring	Belt drive, rubber	300001	Below s.no. 4415300, see Figure 1
	17B	Ring	Belt drive, rubber	309600	From s.no. 4415301, see Figure 2
	15	Aksel	Spindle, tape reel	994113	Below s.no. 4415300, see Figure 1
	15B	Aksel	Spindle, tape reel	994187	From s.no. 4415301, see Figure 2
8	28	Hode	Head, erase, Tandberg	716331	Innføring av Tandberg viskehode. Ved utskifting erstatt med samme hodetype. Se Figur 3.
		Skrue	Screw, 1.2 x 11.5 mm	890008	
		Skive	Washer, 1.4 mm	356947	
					Introduction of Tandberg erase head. Replace with same type of head. See Figure 3.
9	32	Hode	Head, rec./playback	995115	U.S.-version
9	2	Vender	Switch, push	358700	From s.no. 4406300



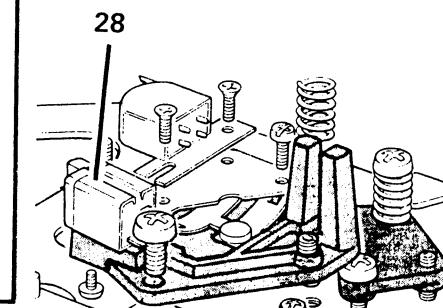
*Fig.1. Counter drive belt, below s.no. 4415300
Telleverksrem under s.nr 4415300*



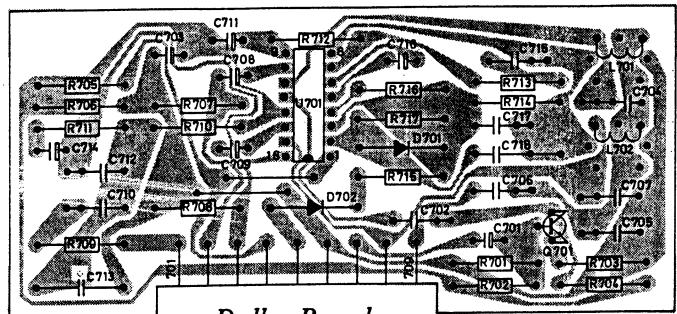
*Fig.2. Counter drive belt, above s.no.4415300
Telleverksrem, over s.nr.4415300*



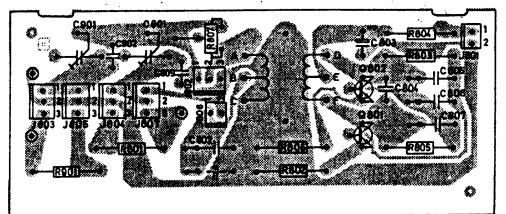
*Fig. 3. Two different types of erase heads
To type slukkehoder*



Merk: Ved utskifting, erstatt med samme type hode.
Note: Replace with same type of head

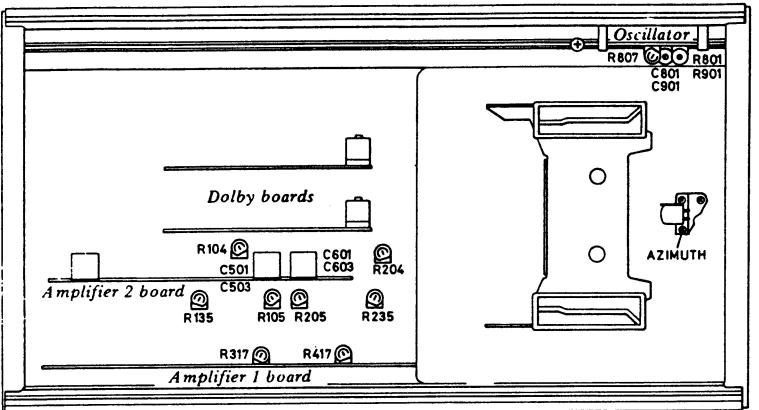


Dolby Board



Osc. Board

ELECTRICAL CHECKS AND ADJUSTMENTS FOR TCD 310 Mk II



Location of test points and adjustable components

GENERAL

- “0 dB” level is defined as 775 mV. Thus – 5 dB equals 450 mV and – 35 dB equals 14 mV.
- Make the adjustments in the order in which they are listed here. Many of the adjustments require that previous adjustments have already been correctly made. It is especially important that adjustment for SPECIAL tape be made before adjustment for NORMAL tape.
- Clean and degauss the tape path before and after the adjustments. It is assumed that the tape path has already been correctly adjusted as described in the Service Manual for the TCD 310.

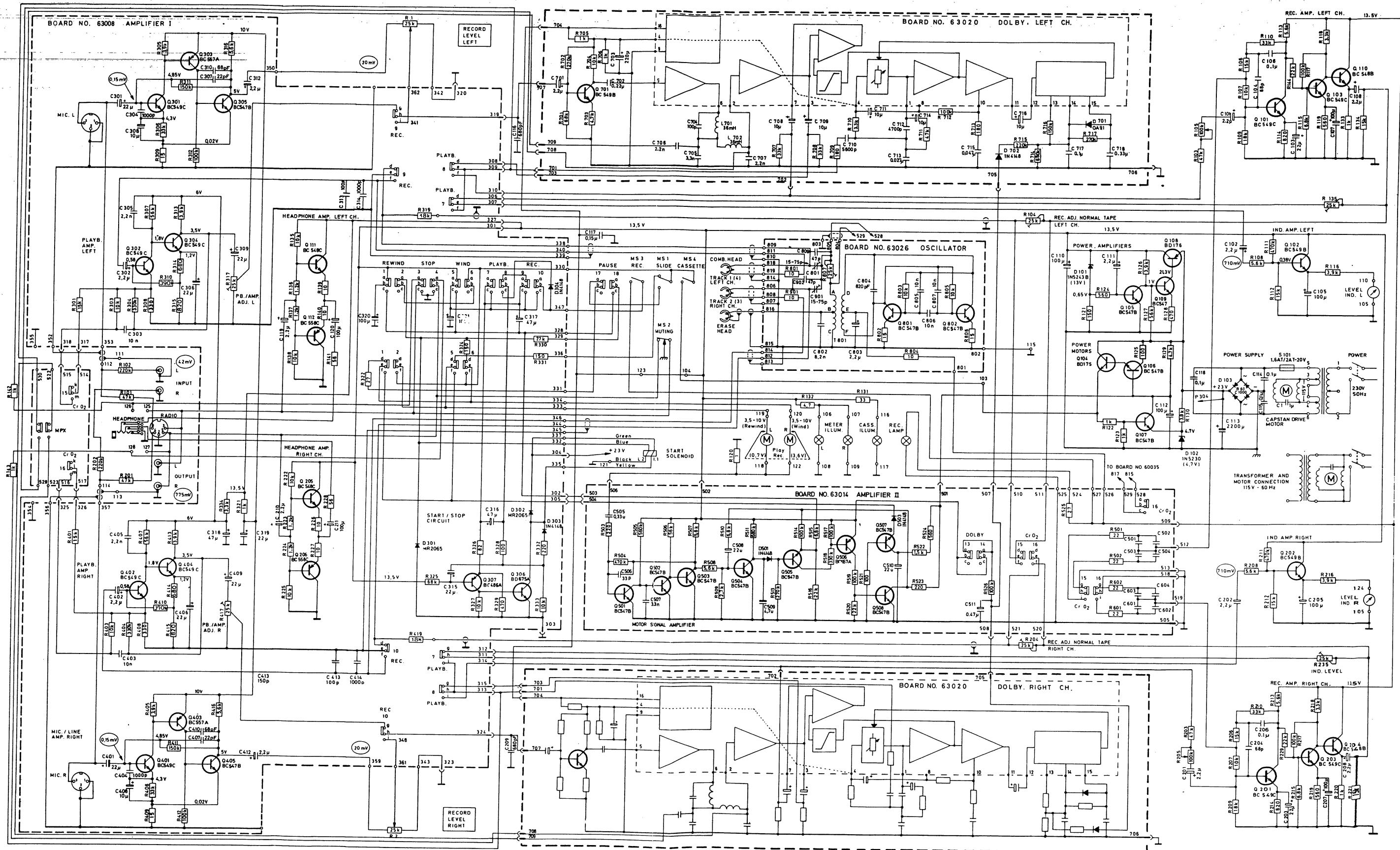
NECESSARY EQUIPMENT

- 2 high impedance voltmeters (do NOT use universal meters).
- Frequency counter.
- Audio generator.
- Distortion meter.
- Wow meter (required for wow test only).
- Hum/noise meter (required for signal/noise test).
- Tandberg test tapes No. 21 (1,000 Hz speed test), No. 22 (3,150 Hz wow test), No. 23 (6,300 Hz azimuth test) and No. 24 (1,000 Hz playback level).
- TDK C60 SA or equivalent.
- Maxell C60 UD or equivalent.

No.	Adjustment or check	Tape	Set the cassette deck to	Measuring instrument	Measure at	Correct reading	Adjust	Comments
1	Record/playback head azimuth	No. 23	Playback	Voltmeters	OUTPUT sockets	Maximum output signal. Difference between the tracks: < 4 dB	Azimuth screw on head	Adjust to best compromise
2	Playback level	No. 24	Playback	Voltmeters	OUTPUT sockets	775 mV	R317 (left channel) R417 (right channel)	—
3	Tape speed	No. 21	Playback	Frequency counter	OUTPUT socket	± 1% (990 – 1010)	—	—
4	Wow	No. 22	Playback	Wow meter (according to DIN 45507)	OUTPUT socket	≤ 0.2% (DIN 45511 peak weighted)	—	Measure at end of tape. Measure both in vertical and horizontal position.
5	Oscillator frequency	SPECIAL	SPECIAL Recording	Frequency counter	Connect inductively to erase head (see comments)	80 – 100 kHz	—	Connection is made with a coil or a few turns of ordinary wire. Instead of a frequency counter a long-wave receiver (tuned to 3rd. harmonic) can be used.
6	Oscillator erase voltage	SPECIAL	SPECIAL Recording	Voltmeter	Across erase head	28 – 32 V	—	—
7	Oscillator	SPECIAL	SPECIAL	Voltmeters	OUTPUT	≤ 2 mV	—	INPUT sockets open.

No.	Adjustment or check	Tape	Measuring instrument	Measure at	Procedure
2 ADJUSTMENT FOR SPECIAL TAPE					
2.1	Bias (preadjustment)	SPECIAL	Voltmeters	R801 (left channel) R901 (right channel) see “location” drawing	Set the cassette deck to SPECIAL recording and adjust C801 (left ch.) and C901 (right ch.) to readings of approximately 6–8 mV. (Measure between ground and the side of the resistor which is connected to the head).
2.2	Recording level	SPECIAL	Voltmeters	OUTPUT sockets	Set the cassette deck to SPECIAL recording. R1 and R2 to mid-position. Connect an audio generator to the INPUT sockets. Adjust the generator to 400 Hz, – 5 dB (= 450 mV on the voltmeters). [– 5 dB is used instead of 0 dB in order to avoid inaccurate results caused by varying tape characteristics.]
					Rewind and play back. The voltmeters should now read – 5 dB (= 450 mV) ± 0.5 dB. If outside the tolerance, make a new recording while adjusting R105 (left channel) and R205 (right channel) as required. Then play back and check once more.
2.3	Overall frequency response (adjustment)	SPECIAL	Voltmeters	OUTPUT sockets	Set the cassette deck to SPECIAL recording. Adjust the generator to – 35 dB (= 14 mV on the voltmeters) and record a 400 Hz and a 10,000 Hz signal at this level. Rewind and play back. Use the 400 Hz signal as a reference and check on both channels that the 10,000 Hz signal is within the following tolerance: – 0 dB to + 5 dB. If outside the tolerance adjust C801 and C901 (bias). Then make a new recording, play back and check once more.
2.4	Distortion	SPECIAL	Distortion meter	OUTPUT sockets	Set the cassette deck to SPECIAL recording. Generator to 1000 Hz, 0 dB (= 775 mV on the voltmeters). Rewind and play back. Check that the distortion is ≤ 3%. If outside the tolerance adjust C801 and C901 (bias). Make a new recording, play back and check once more. Then repeat step 2.3
2.5	Overall frequency response (check with DOLBY)	SPECIAL	Voltmeters	OUTPUT sockets	Set the cassette deck to SPECIAL DOLBY (!) recording. Adjust the generator to – 35 dB and record the following frequencies: 400 Hz, 55 Hz, 1000 Hz, 4000 Hz, 10,000 Hz, 14,000 Hz. Rewind and play back. Use the 400 Hz signal as a reference, and check that the other signals are within the following tolerances: 55 Hz: – 3 dB to + 2 dB 10,000 Hz: 0 dB to + 5 dB 1000 Hz: – 2 dB to + 2 dB 14,000 Hz: – 2 dB to + 5 dB 4000 Hz: – 2 dB to + 4 dB If outside the tolerances try changing the values of C501/C502 (left ch) and C601/C602 (right ch). Increased values give higher treble response.
2.6	Indicators	SPECIAL	Indicators		Record a 400 Hz, 0 dB signal and adjust R135 (left ch) and R235 (right ch) to 0 dB deflection on both indicators.

No.	Adjustment or check	Tape	Measuring instrument	Measure at	Procedure																
3 ADJUSTMENT FOR NORMAL TAPE																					
3.1	Recording level	NORMAL	Voltmeters	OUTPUT sockets	Same as in step 2.2, except that the SPECIAL button is released. If outside the tolerance adjust R104 (left ch) and R204 (right ch). DO NOT TOUCH R105 OR R205. NOTE! Adjustment of R104 and R204 will not affect the readings on the indicators of the cassette deck.																
3.2	Overall frequency response (adjustment)	NORMAL	Voltmeters	OUTPUT sockets	Same as in step 2.3, except that the SPECIAL button is released. If outside the tolerance adjust R807. DO NOT TOUCH C801 OR C901.																
3.3	Distortion	NORMAL	Distortion meter	OUTPUT sockets	Same as in step 2.4, except that the SPECIAL button is released. Is outside the tolerance adjust R807. Then repeat 3.2. DO NOT TOUCH C801 OR C901.																
3.4	Overall frequency response (check with DOLBY)	NORMAL	Voltmeters	OUTPUT sockets	Same as in step 2.5, except that the SPECIAL button is released. Tolerances: 55 Hz: – 3 dB to + 2 dB 10,000 Hz: – 2 dB to + 5 dB 1000 Hz: – 2 dB to + 2 dB 14,000 Hz: – 3 dB to + 4 dB If outside the tolerances try changing the values of C503/504 (left ch) and C603/C604 (right ch). Increased values give higher treble response.																
3.5	Erasure	SPECIAL	Voltmeters	OUTPUT sockets	Record a 1000 Hz, 0 dB signal. Rewind and erase. Then rewind once more and play back the erased piece. The voltmeters should read < – 62 dB.																
3.6	Signal/noise	SPECIAL	Hum/noise and meter	OUTPUT sockets	The signal/noise ratios at 3% distortion should be at least as good as specified in the table below: <table border="1" style="margin-left: auto; margin-right: auto;"><tr><th colspan="2">DOLBY N.R.</th><th>OFF</th><th>ON</th></tr><tr><th>Signal/tape noise:</th><th></th><th>NORMAL</th><th>SPECIAL</th></tr><tr><td>DIN 45511 (Geräuschspannung)</td><td>46 dB</td><td>49 dB</td><td>55 dB</td></tr><tr><td>DIN 45511 (Fremdspannung)</td><td>46 dB</td><td>48 dB</td><td>50 dB</td></tr></table>	DOLBY N.R.		OFF	ON	Signal/tape noise:		NORMAL	SPECIAL	DIN 45511 (Geräuschspannung)	46 dB	49 dB	55 dB	DIN 45511 (Fremdspannung)	46 dB	48 dB	50 dB
DOLBY N.R.		OFF	ON																		
Signal/tape noise:		NORMAL	SPECIAL																		
DIN 45511 (Geräuschspannung)	46 dB	49 dB	55 dB																		
DIN 45511 (Fremdspannung)	46 dB	48 dB	50 dB																		



All voltages are measured with V.T.V.M.

with input impedance min. 10 Mhosms.

All DC voltages measured without signal

(mV) Denotes signal voltages (1000Hz)

1mV Denotes DC voltages

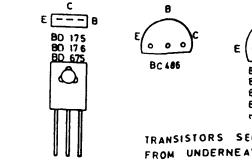
(10V) Denotes voltages in operated mode

L = Left channel (Track 1 or 4)

R = Right channel (Track 2 or 3)

→ = Connector

○ 101 = Connection terminal



POWER	REW.	STOP	WIND	PLAYB.	REC.	MPX	DOLBY	SPEC. TAPE	PAUSE
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
1 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0

ALL SWITCHES IN UNOPERATED POSITION